The Art and Science of Depiction

Limitations of the Medium, compensation or accentuation

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Plan of the next sessions

- The picture is flat
- The viewpoint is unique
- The image is finite, it has a frame
- The picture is static
- The contrast is limited
- The gamut (palette) is limited
The image is flat
Surface-based

- Visible surfaces, organization
- Distance, orientation

Limitations: Flatness
Depth cues

- Binocular
- Monocular
- Dynamic
- Pictorial

- Unconscious inference
# Depth cues

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Limitations: Flatness
Convergence

- Few meters

Limitations: Flatness
Stereovision

- Different image left/right eye
Panum fusion

Double Images
(Uncrossed Disparity)

FUSED IMAGES

Double Images
(Crossed Disparity)

Panum's Area

Horopter

Left Eye

Right Eye

Limitations: Flatness
Stereopsis
Stereo

Limitations: Flatness
Random dot stereogram

Limitations: Flatness
Pseudoscope

- Pictorial cues are stronger than stereo
Accommodation

- Close distance (< 3 meters)
Accommodation

- Blurriness
- But no proprioceptive information
- Related to aerial perspective
Accommodation

• Cartier Bresson
Parallax

- Movement
Pictorial cues

- Occlusion
- Size
- Position relative to the horizon
- Convergence of parallels, linear perspective
- Shading, shadow
- Texture gradient
- Aerial perspective
Occlusion

Limitations: Flatness
Occlusion

Limitations: Flatness
Occlusion

- Figure-ground...
Relative size
Relative size

Limitations: Flatness
Familiar size
Familiar size
Familiar size – dissonance

- Magritte
Familiar size

Limitations: Flatness
Position relative to the horizon

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Position relative to the horizon
Position relative to the horizon
Position relative to the horizon

- Bruegel
Convergence of parallels

- Caillebotte
Linear perspective

Limitations: Flatness
Linear perspective

Limitations: Flatness
Linear perspective

Limitations: Flatness
Shading

- Chiaroscuro
- Da Vinci
Shading

• Make up

Limitations: Flatness
Lighting assumption & reversal

- We assume that the light is above
Lighting assumption & reversal
Lighting assumption & reversal

- faces
Lighting assumption & reversal

• Lucien Clergue, *Camargue*, 1940
Shadow

Limitations: Flatness
Shadow

- David

Limitations: Flatness
Shadow

- Caravaggio
Texture gradient

Limitations: Flatness
Texture gradient

- Constable

Limitations: Flatness
Aerial perspective

- Leonardo Da Vinci
Aerial perspective

Limitations: Flatness
Aerial perspective

- Constable
Aerial perspective

- Delacroix
- Saturation
Aerial perspective

- Pissaro

Limitations: Flatness
Inverted Aerial perspective

- Nash
Aerial perspective

- Darker colors tend to recede
- Rembrandt
Planes of light

• Goya
• Darker colors usually recede
• Makes picture dynamic
Planes of light

- Lighting
Planes of light

- Vermeer
Grouping

- Aerial perspective
- Depth of field
- Relative size
- Grouping with respect to one property results in grouping by distance
Perspective

Limitations: Flatness
Monet

Limitations: Flatness
Occlusion & horizon
Counter-example
Counter-example

- De Chirico
## Depth cues and art history

| Period       | Relative size | Occluded objects | Shadow       | Elevation | Texture gradients | Atmosphe- | Linear perspective |
|--------------|---------------|------------------|--------------|-----------|-------------------| r perspective |                  |
| Prehistoric  | Yes           | Yes              | Limited      | Yes       | Not generally     | No          | No                 |
| Egyptian     | No            | Yes              | Not generally | Yes       | No                | No          | No                 |
| Greek        | Limited       | Yes              | No           | Limited   | No                | Limited     | Limited            |
| Roman        | Yes           | Yes              | Yes          | Yes       | Limited           | No          | Limited            |
| Renaissance  | Yes           | Yes              | Yes          | Yes       | Yes               | Yes         | Limited            |
| Impressionist| Yes           | Yes              | Yes          | Yes       | No                | Not generally | Yes               |
| Modern       | Sometimes     | Yes              | Sometimes   | Limited   | Not generally     | Not generally | Not generally     |

Limitations: Flatness